SUMMARY

1.18 Energy and Our Standard of Living

How is energy related to our high standard of living?

Today, most Americans enjoy a high standard of living. One reason for our high standard of living is that our businesses and industries can rely on adequate supplies of energy at prices they can afford to pay. The average citizen can also rely on adequate supplies of energy for personal and family needs at home. Electricity is an important part of this energy supply.

1.19 Nuclear Energy and Electricity

How is electricity related to nuclear waste?

Every energy source used to produce electricity has both benefits and challenges. One challenge with using nuclear energy is that nuclear powerplants produce nuclear wastes. Nuclear wastes are radioactive. This means they require special handling, storage, and final disposal to protect the public and the environment from hazards associated with radiation. The accumulation of nuclear wastes is a national challenge.

1.20 Categories of Nuclear Waste

What are the types of nuclear waste?

There are four main categories of nuclear waste: (1) high-level waste, which includes spent fuel; (2) low-level waste; (3) transuranic waste; and (4) mill tailings. Each type will be disposed of in a way appropriate to its characteristics.

High-Level Nuclear Waste: Spent Fuel

What is spent fuel? How will it be disposed of?

All spent nuclear fuel from commercial nuclear powerplants will be disposed of in a geologic repository for high-level waste. The U.S. currently has no plans for reprocessing high-level nuclear waste. The spent fuel rods will be sealed in special metal canisters for disposal.

Defense High-Level Waste

How is defense high-level waste disposed of?

High-level nuclear waste results from reprocessing spent fuel from defense reactors to recover uranium and/or plutonium. All high-level nuclear waste will be disposed of in a geologic repository. The waste is in liquid form after reprocessing. It will be made into a solid glass or ceramic form and will be sealed in metal canisters for permanent disposal. In 1985, President Reagan decided to dispose of high-level waste from defense activities in the same geologic repository that will be used for spent fuel from nuclear powerplants.

Low-Level Waste

What is low-level waste?

All radioactive waste other than spent fuel, high-level waste, and transuranic waste is considered to be low-level waste. Low-level nuclear waste is generated at commercial nuclear powerplants, hospitals, industrial and agricultural facilities, and academic institutions. Depending upon its activity, the low-level waste is now disposed of in various forms of shallow-land burial.

Who will be responsible for commercial low-level waste disposal?

Beginning in 1993, low-level waste generated from all activities, except Federal defense or research and development activities, became the responsibility of the State in which the waste is produced. Low-level waste will be disposed of in facilities developed by individual States or groups of States known as compacts.

Who will dispose of low-level waste from Federal activities?

Low-level waste from defense activities or research and development activities of the Federal Government will be disposed of at Federal sites, primarily where the waste is generated. It will not be disposed of at the commercial disposal sites States are responsible for.

Mill Tailings

How are they disposed of?

Mill tailings are generally disposed of where they are produced, at facilities where uranium ore is mined and milled. The Federal Government has responsibility for tailings at inactive milling facilities. Companies currently milling uranium must dispose of tailings according to State and Federal regulations.

Transuranic Waste

How will transuranic waste be disposed of?

Transuranic waste is mostly used clothing, rags, equipment, etc. It is similar to low-level waste but contains elements with very long half-lives. Although the total activity of transuranic wastes is no greater than certain low-level wastes, geologic disposal is considered necessary because transuranic waste loses radioactivity very slowly and remains hazardous for thousands of years.

Transuranic wastes result primarily from defense activities. Some transuranic waste is being stored in surface facilities, but current plans call for most of this waste and transuranic waste generated in the future to be ultimately placed in deep geologic storage. The U.S. Government plans to test disposal of transuranic waste at the Waste Isolation Pilot Plant (WIPP) facility in New Mexico. The type of rock at WIPP is bedded salt, which is composed of layers of salt left behind from ancient seas.